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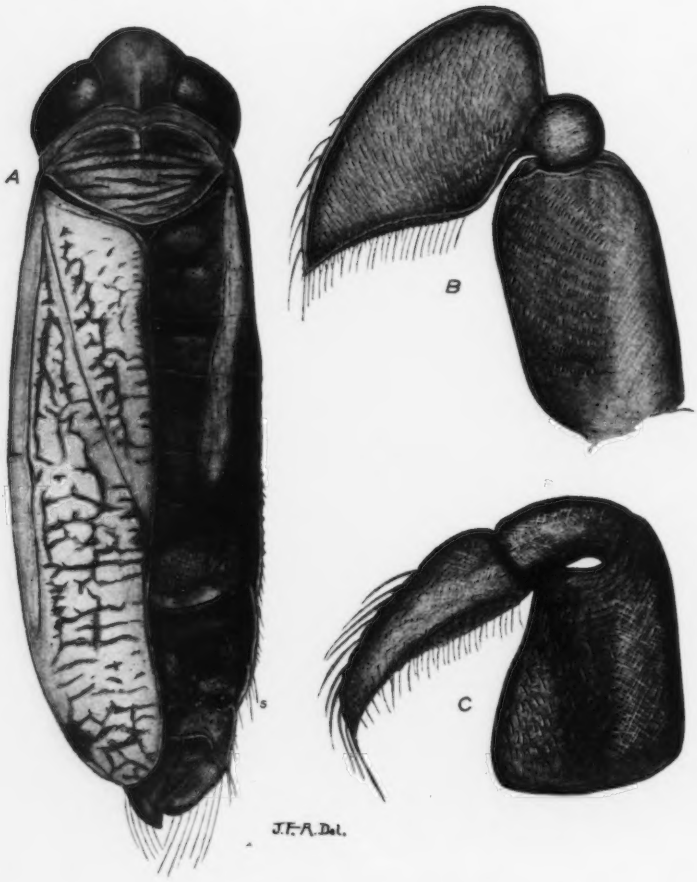

PALMACORIXA GILLETTII—ABBOTT.

ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. XXIII. OCTOBER, 1912. NO. 8.

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A new genus of Corixidae (Hemip.).

By JAMES FRANCIS ABBOTT, Washington University, St. Louis, Missouri.

(Plate XVIII)

PALMACORIXA new genus.

Elongate, with vermiculate semi-obsolete markings. Male palae thin, platelike, obliquely inserted, the height about one-half the greatest length, the upper margin parabolic, the stridulating "pegs" in two rows and reduced to the lower proximal corner of the inner surface. Large stridular area on femur. Female palae short cultrate, femur also apparently with a stridular area. No terminal palar spine in either sex. Male vertex tumid, face flat, hardly foveate, female face convex. Metathoracic wings aborted in both sexes. Male asymmetry and strigil dextral; fifth tergite entire, sixth divided. Perhaps related to *Arctocorisa* Walleng. but differs markedly in several particulars from any other genus hitherto described.

Palmacorixa gillettii new species.

Head pale yellow, vertex usually carinate, posterior angles rather acute and produced backward. Posterior margin emarginate. In-

terorbital space (posterior margin) about twice in the median length of the head in the male; one and a half times in the female. Inner margins of eyes parallel in facial aspect.

Pronotum lenticular, with a more or less definite median keel, rather strongly margined, the margin being marked by a narrow line of brown, the anterior line incised to correspond with the emargination of the head. Color, yellowish, paler at the sides, with eight to ten delicate broken and confluent lineations, some of the most posterior of which join the marginal line. Surface of pronotum polished, minutely rastrate; it requires a compound microscope to resolve the rastrations.

Tegmina polished, non-rastrate, light yellowish with brown markings. The latter are quite variable, usually not displaying the familiar cross-barred effect of the majority of the species in the family. Clavus more or less immaculate toward the inner angle as in *mercenaria* Say, the markings reduced to a more or less definite diagonal stripe following the direction of the corial suture. The inner edge of the clavus is margined with brown, and between this and the diagonal stripe mentioned are numerous lineations ranging from isolated flecks in some individuals to interlocking and connecting cross bars in others. Embolium immaculate, its inner edge strongly margined. Corium and membrane with vermiculate and inosculate brown markings, usually arranged in two rather indefinite longitudinal stripes. A dark fleck on the outer edge of the membrane.

Metathoracic wings aborted in both sexes to a rudiment which extends from thorax to about the level of the third abdominal segment. Strigil ovate, about 0.3 mm. long by 0.2 mm. wide, transversely placed, with 6-7 striae. Legs and entire under surface yellowish white.

Male palae very strongly compressed, plate like, the lower edge straight, the upper edge parabolic in outline; the surface covered with fine depressed spines. Toward the lower edge, next the tibial joint are found the "pegs" in two rows, 5-6 in the upper row, 9-10 in the lower. These two rows seem rather sharply differentiated from the rest of the spines covering the face of the pala, yet it would seem to be not impossible that the whole surface may function in stridulation. The lower edge of the pala is fringed with cilia but there is no terminal spine. Tibia globular, about one-fourth the length of the pala. Femur oblong, as long as the pala, its width about one-half its length. Stridular area large, consisting of numerous rows of minute spines. Female palae short cultrate, triangular in section, the length a little less than three times the greatest height. Tibia rounded oblong, about as wide as the pala, its length a little more than twice its width. Femur trapezoidal in shape with a distinct area of strong spines analogous to the stridular area in males.

Second leg: Spines about equal to tibia in length, the latter one-half the femur. Tarsus slightly shorter than tibia. Third legs: Femur and tibia subequal and about four-fifths the tarsus. Metaxyphus short, acute.

Length 6 mm., width across pronotum 1½ mm.

Described from three males and three females from Fort Collins, Colorado, collected in May and June by Prof. C. P Gillette to whom the author is indebted for the specimens. Superficially the species resembles *calva* Say, with which it possibly has been confused. It is considerably larger than Say's species and structurally very different from any other Corixid with which the writer is familiar.

Explanation of Plate XVIII.

A. *Palmacorixa gillettii* n. gen. et sp. Male with one hemielytron removed to show the nature of the abdominal asymmetry, the strigil (s), and the rudimentary metathoracic wing. Other specimens show a rather more definite tegminal lineation. x12.

B. Male first leg (pala, tibia, and femur) showing the inner surface of the pala with the stridulating pegs and the stridular area on the femur. x55.

C. Female first leg (pala, tibia, and femur). x55.

Notes on Pediculus vestimenti Nietzsche, the Body Louse of Man.

By A. A. GIRAULT, Brisbane, Queensland, Australia.

The following fragmentary notes were derived from a visit to the Cook County Hospital for the Indigent Insane at Dunning, near Chicago, Illinois, and are published for their general interest.

Dr. F. B. Clarke, formerly medical superintendent of the hospital, and Mr. J. J. Davis, my colleague in economic entomology, were experimenting tentatively on fumigants with the object of finding one which was efficient both as an insecticide and germicide or disinfectant in order to obviate separate fumigations of entering patients' clothes. The common body louse was one of the insects used in the experiments and some eggs of this insect forming the contral lot of one of the experiments

was turned over to me for observation. It was from some of the nymphs from these eggs that the following observations were made on the feeding habits of the very young. The eggs were obtained from a patient's black coat which was covered with them inside, so much so as to be nearly white in color. I give the observations in detail, just as they are rather hastily jotted down by me.

Nymph I.

Hatched 30th March, p. m. Body wholly silvery white, the eyes and claws blackish. Taken at 8.21 p. m. and placed on arm. Took feeding position at once and after 1½ minutes from start the first blood entered, staining the thorax crimson. Remained feeding for 11 minutes, the blood gradually staining the thorax and meson of abdomen a deep crimson, the rest of the abdomen salmon colored. Gradually the abdomen swelled, finally forcing two minute red strings of dry excrement from the anus; fed until nearly standing on head (really anterior legs), the intermediate and posterior legs free, waving slowly in air. Blood plainly visible as it pulsated through the head. Legs, head, prothorax and antennæ remained white. Placed at once on piece of cheese cloth and confined in a homeopathic vial, plugged with cotton. After feeding, abdomen fully extended, cylindrical.

By noon, March 31st and sooner, the body had assumed its white color again, saving the dark blotch at the dorsal aspect of the abdomen, centrally; minute pellets of crimson excrement adhering to the anus. Thus the food obtained last night had been entirely digested. At 12.16 p. m., 31st, the portion of the cloth containing the young louse was placed against the skin and without hesitation the nymph crawled over on to the arm and at once began to feed (12.16 p. m. to 12.31 p. m.); the entering blood could not be seen very distinctly but gradually the abdomen became stained; a small dry pellet of excrement was voided as the abdomen filled.

At 8.02 p. m., March 31st, it was again fed, blood entering after 4 minutes and feeding continued for 3 minutes. At first, under 16-candle power light as at first meal, nymph always crawled away from food (naked arm) as in Nymph II.

Placed on arm again at 1.07 p. m., April 1st, the nymph then pallid saving a dark blotch along the alimentary canal; first blood entered after 2 minutes and feeding continued til 1.20 p. m.; went to food at once; broad daylight. No signs of an ecdysis. By 10 p. m., April 1st, the nymph was again pallid; it eagerly went to food at 9.59 p. m., the first blood not entering however, until after 3½ minutes of probing;

feeding continued till 10.11 p. m. (stopped by force). Placed on food again at 8.36 p. m., April 2nd, the nymph pale; first blood entered after 1 minute and feeding continued till 9.15 p. m.; excrement voided as usual but in larger amounts. Nymph was dead by 5 p. m., April 5th, without change, having been left without food.

Nymph II.

Hatched 30th March, 1910. Placed at 8.48 p. m. on skin of arm; did not crawl at all but at once took feeding position and attempted to feed. Unsuccessful until after 4 minutes when first blood entered the body; fully colored after 1½ minutes of feeding; the entire abdomen and thorax a deep crimson; excrement gradually forced from anus. Fed for 14 minutes. Then removed to vial onto piece of cheese cloth.

By noon March 31st, the young nymph was again shrunken about the abdomen, merely the alimentary canal and sides of thorax being still crimson. Placed on hairless portion of arm, at 1.48 p. m., 31st; blood began to pulsate after 1½ minutes, the pulsations at the rate of about 3 per second. As the abdomen became inflated, a long, dry string of minute blood-red pellets were forced from the anus; this was moniliform nearly and brilliant ruby red. At 1.59 p. m. stopped feeding and commenced to crawl slowly off. Alimentary canal stained ruby red, the remainder of abdomen pinkish. Nymph would not voluntarily go to food at 8 p. m., 31st March but crawled away from it (under bright light 16 c. p.).

In bright daylight, the nymph pallid excepting dark alimentary canal, it went to food at once at 1.24 p. m., April 1st; first blood entered at 1.26 p. m. and feeding continued till 1.32 p. m. Placed on the arm again at 10.15 p. m., April 1st, but wandered until 10.17, when it settled to feed; first blood entered after three-quarters of a minute; fed until satisfied, till 10.27 p. m., excrement being voided at 10.24 p. m.

Placed on arm again at 8.11 p. m., April 2nd, the nymph pale; first blood entered after 2 minutes and feeding continued till 8.18 p. m., until satisfied; no signs of an ecdysis. Placed on arm again at 10.12 p. m., April 5th, 1910, after three days of starvation. Nymph very pale, shrunken, the alimentary canal filled with a thin, dark streak of excrement. Too weak to pump blood, though effort was continuous up to 10.29 p. m. Slightest jar would cause relaxation and the louse would drop off or turn over on its back. Discontinued attempts to feed at 10.31 p. m. and lay inert on its back. Replaced in vial. Died April 6th, 1910.

Nymph III.

Hatched at 10 a. m., 31st March, 1910. Perfectly white. Placed on arm at 2.37 p. m., March 31st. It immediately began to crawl up to

and through the hairs along side of fore arm for 1 minute (1½ inches) then settled down to feed (2.38 p. m.-2.45); blood began to enter the head after 2 minutes (2.40 p. m.); abdomen swollen at 2 42 p. m. At 2.44½ a red pellet of excrement was exuded from the abdomen, continuing in a string of a dozen or more, the nymph ceasing to feed. To the naked eye, the nymph now appears as a small red conical moving object (thorax and abdomen, alone visible thus): Removed to vial on piece of cheese cloth. Nymph avoided food when presented to it at 8.23 p. m., 31st March and though at first attempting to feed when placed on arm, after a minute and a half crawled off. Body still deeply colored.

At 4.02 p. m., April 1st, the nymph went at once to food when the cloth holding it was approached to bared arm; its body pallid, excepting darkness of the alimentary canal. Blood entered at 4.04 p. m. and feeding continued until satisfied at 4.15 p. m. The abdomen then had the appearance of a partially inflated balloon. Toward the last, a minute string of ruby pellets, dry, was slowly exuded from the anus and as slowly dropped; this was capped or headed by a rounded shining dark clot. And again from 10.30 p. m. to 10.43 p. m., April 1st, the nymph was fed. Could see no blood enter but abdomen became swollen, peristalsis strong, but no excrement voided; taken from food. Placed on food again at 8.44½ p. m., April 2nd, the nymph then pallid, excepting dark canal; first blood entered after 1 minute; feeding continued until 9.07 p. m. (satisfied); anus at first, as usual after first two or three meals, with a round excrementitious cap.

Placed on again not until 10.21 p. m., April 5th, nymph then very pale, the abdomen shrunken. Commenced to feed at once, causing slight itching. Successful in obtaining blood after 4½ minutes of continuous effort and fed until 10.55 p. m.; the usual red excrement voided. Feeding stopped by observer, blood not pulsating then, but peristalsis strong and nymph was probably being imbibed. Placed on food again at 9.15 p. m., April 6th, 1910, the nymph pale; blood began to enter after 4 minutes and feeding continued till 9.30 p. m. (by permission). Pulsation of blood stopped at 9.27 p. m. Placed on food again April 7th, 10.48 a. m., the nymph then colored somewhat; began to probe at once, first blood entering not at all; none was seen to enter though the nymph was plainly obtaining nourishment, the abdomen swelling and excrement being voided gradually, as usual during the process of feeding. The voided excrement had the appearance of minute blackheart cherries strung together. Feeding continued until 11.39 a. m., the nymph being removed. It was then much swollen, the abdomen red. At 6.45 p. m., April 7th, it was placed on food but crawled around for five minutes and would not feed. Replaced in vial.

Eagerly went to food at 10.26 p. m., April 7th, 1910; at first peristalsis strong; first blood entered at 10.31 p. m., the pulsations strong. Pulsations practically stopped at 10.37 p. m. but were resumed at intervals as excrement was voided to make way for further supplies; feeding stopped by force at 10.46 p. m. Placed on host again at 11.13 a. m., April 8th, 1910; blood began to pulsate after three minutes; left food voluntarily at 11.26 a. m. and crawled several inches, settling again at 11.30 a. m. but did not feed; removed to vial at 11.36 a. m. Placed again at 9.38 p. m., 8th April; began to suck at once till 9.43 without effect; then crawled slightly and settled again at 9.43; was successful up to 9.47, when it again began to crawl; removed. Died after several days.

Nymph IV.

Hatched at 6 p. m., 31st March, 1910. Perfectly white. Placed on naked arm at 8.34 p. m., March 31st, its reaction to food being strong, the nymph eagerly clambering off original piece of infested cloth onto arm in bright glare (direct) 16 c. p. electric light; first blood entered after three minutes; the nymph fastened to the first spot its body fell upon; abdomen and thorax red from blood, the former distended after two minutes of continued pumping; red excrement voided after five minutes; finished feeding at 8.46 p. m. No pain, as with other nymphs. Placed on cloth in vial.

Placed on food a second time at 5.06 p. m., April 1st, 1910; blood began to pulsate at 5.08½ and feeding continued till 5.17 p. m. Placed on food at 9.10 p. m., April 2nd, then pallid; first blood entered after one minute and feeding continued until 9.19 p. m. Not fed again until 10.33½ p. m., April 5th, the nymph then weak, pallid, shrunken, began to "feed" at once. Very weak; unable to keep its position long enough to feed, after turning over on its back and then unable to regain its feet. Replaced in vial at 10.45 p. m. Died several days later.

From these tentative observations, one is rather surprised at the rapidity of digestion in the young nymph, of its seemingly voracious appetite, apparently requiring a constant or else frequently renewed supply of nourishment and, at the length of the first postembryonic stadium (under the conditions of the observations,—food not being constant or renewed at very frequent intervals). Obviously, the nymphs require much more nourishment during stadium than do those of the bedbug, for instance. From my experience in feeding them, I formed the conception of them as being continually hungry, often imbibing and excreting at the same time, occasionally ceasing to feed and wandering slowly about over the host but not for long intervals (of a day or more as in *Cimex lectularius* Linneaus), returning again for their supply of blood after several hours have elapsed. Under the conditions of the observations, when food was

allowed not more than once in twelve hours, in some instances I could not spare the time to allow satisfaction. Sometimes the nymph would settle down as if permanently, the peristalsis movements of the alimentary tract ceasing after the first ten (more or less) minutes. If deprived of food after three or four days for a period of about three days, the nymphs died through sheer weakness, being unable to obtain food try as they may. They did not always feed on normal blood as witness the absence of redness at times when the abdomen was perceptibly enlarging.

I also made the following preliminary experiment to show the length of life of the new-born nymph without food. Four nymphs hatching at 6 p. m., March 31st, 1910, were confined separately in glass vials, containing a small piece of cloth for them to rest upon. The vials were stopped with cotton and were kept in a warm laboratory. Three of them died at about 3 p. m., April 2nd; at this time, the fourth was still alive but obviously weak; it reacted to food but was unable to take it. It died on the following morning. Thus, life continued without food not longer than about thirty-six hours, showing the great dependence of the young louse upon its host.

Thecla clytie, leda and ines (Lepid.).

By J. R. HASKINS, Los Angeles, Calif., and F. GRINNELL, JR., Pasadena, Calif.

Messrs. Barnes and McDunnough, in their article in the February, 1912, number of the NEWS, exhibit too bad form in their personalities concerning the Pacific Coast Lepidopterists to permit of an adequate reply, except by indulging in the same vein. We do feel, however, that we may with propriety discuss several of the points covered by their strictures.

Concerning Mr. W. H. Edwards, no Lepidopterist needs to be told that his work is far ahead of anything else that has been done in America. But Mr. Edwards, as we all know, made many mistakes, like everyone else. Many of these have been corrected by himself and others, and many more will be discovered as the little known species are more closely studied. One has only to turn to a Catalogue of Lepidoptera and note the numerous synonyms by Edwards to appreciate our point.

As for descriptions, we believe that they should be so

worded that when taken in connection with illustrations and type localities no mistakes can be made as to what the author had in mind. Although many descriptions certainly are inadequate, still the majority of them are fairly satisfactory, and our first move in studying a species is always to read the verbatim account of the author and consider his words in connection with the type locality.

We are very glad to find that our article has resulted in the publishing of the fine illustrations in Messrs. Barnes and McDunnough's article in the NEWS. As for their remarks concerning them, our own study, and the illustrations themselves, lead us to entirely different conclusions.

Referring to the illustrations of *leda* and *ines*, so called, we note that these variations came from identical localities, are not even seasonal, and are the widest variations obtainable from a set of one hundred specimens. We may corroborate this by saying that we have several sets of from five to twenty specimens each, taken in widely separated localities, in which the same variation can be noticed. For example, Mr. Haskin, during two days' careful search, took seven specimens from one small clump of willow, covering not more than twenty square feet of space, in a sandy wash near Cananea, Mexico. Another set of six came from a patch of mesquite, east of Needles, California, on the Arizona side of the Colorado River and about eighty miles from Prescott, the type locality of *leda*. And, by the way, the type locality of *ines* is not Prescott, as stated by Messrs. Barnes and McDunnough, but Southern Arizona. (See Edwards' original description.)

Again, Mr. Grinnell has a set of twenty specimens from one limited locality in Southern California. The extremes of this latter set in particular are even more marked than in the illustrations, yet it would be stretching one's imagination to attempt to separate them into species or even forms. These facts, together with the well known fact that there are many other small species, especially among the Theclas, which vary as much as and even more than the one under discussion, confirm us in the belief that we are right in claiming that *leda* and *ines* are but synonyms.

With reference to *clytie*; At the time we made our study, the only references available were Edwards' description, Holland's illustration and Aaron's reference. The new illustration of the under side is fine and causes us to modify our first conclusion. We now believe that *clytie* should be called the species with Southeastern Texas as its habitat. *Ines* and *leda* are synonymous and represent the southwestern form as influenced by a desert environment. The general resemblance in markings, as shown by the illustrations, is very close and such differences as exist between *clytie* and the southwestern form can be easily accounted for by the difference in environment. As it stands this way there is no danger of confusing it with any other species; but with an attempted differentiation into three species unlimited confusion is possible. We therefore arrange these names as follows:

T. clytie Edwards.
Var. *leda* Edwards.
Syn. *ines* Edwards.

Many other examples might be mentioned as showing the influence of the dry southwest on the coloring of butterflies. In our opinion a close study of these differences, and a simplification of our synonymy, is much more to be desired at the present time than a constant attempt to introduce new names, based on the description of one or of a very limited number of specimens.

A Few Experiments with the Effects of the Protective Vapors of Heteroptera on Other Insects.

By A. A. GIRAULT, Brisbane, Queensland, Australia. ....

The following notes may add one or two facts of importance bearing indirectly on the protective value of the odoriferous secretions of a few insects. Facts of this nature do not add actual evidence of protection which must be observed in nature and supplemented by dissections of the natural enemies of the protected insects.

THE POISONOUS NATURE OF THE ODOR OF EUSCHISTUS:

One June 1, 1909, four adults of a species of *Euschistus*, captured in a clump of weeds, were confined together in a homeopathic vial, closely stoppered, from 11 A. M. to 2.08 P. M., or for slightly over three hours. They were then carefully removed. An adult *Megilla maculata* De Geer was added to the vial, controlled by an adult kept in a clean vial. No apparent effect.

The four bugs having been placed together in a stender dish, on the following day their odor was very perceptible and at 7 A. M. an adult of *Tyloderma foveolatum* Say was placed in with them. A similar stender dish contained a control adult. No effect resulted. It is probable here that the protective vapor of these insects had already been dissipated before the experiments.

THE POISONOUS NATURE OF THE ODOR OF BROCHYMENA:

An adult *Brochymena* was captured from apple at 8 A. M., May 14, 1909, and was at once confined in a homeopathic vial for twenty-four hours, occasionally being roughly shaken up. The vial was closely stoppered. At 8 A. M., May 15, the still living bug was hastily removed; the vial contained then a very faint sweetish odor. A control vial was prepared.

(1). At 8.10 A. M., May 15, a worker of *Lasius niger americanus* was introduced into each vial. Both ants at once began to crawl about, acting normally. No change up to 11 A. M., when both were apparently normal. When the bug was removed from the first vial it was hastily transferred to another, smaller one in which it died at nine o'clock; this vial contained filter paper to absorb moisture. The experiment ant was removed to this vial at 11.05 A. M., the control removed to a similar, but clean vial. The second experiment vial now contained the dead *Brochymena* and had a pronounced odor given off by the bug when it was confined at 7 A. M., or else when it died. Three minutes afterwards, the experiment ant showed convulsive movements but continued to crawl feebly; a minute

later it was in continuous convulsions, which did not end in (apparent) death until after fifteen minutes. The control ant died several hours afterward, but without convulsions.

(2). At 1.10 P. M., May 17, 1909, another worker of the same ant was introduced into the vial still containing the dead body of the *Brochymena* and which still had a strong odor. A similar control. After one minute, the experiment ant fell over in convulsions and was apparently dead five minutes later; control ant remained normal. Both ants were captured at the same time and were not selected.

(3). This experiment was repeated at 3.15 P. M., May 18, with two random workers captured at the same time. Within three minutes the ant of the experiment was in violent convulsions, the control remaining normal. After 15 minutes the former was apparently dead. It was removed to the control vial containing the normal control ant. It fully recovered by 7 P. M., both ants then normal.

(4). Another worker of the same species was introduced into the vial containing the dead bug at 3.30 P. M. Before a minute had elapsed, it was obviously struggling against the effects of the secretion and was apparently dead after a quarter of an hour. At 7 P. M., or after three and a half hours' exposure, it was removed to the control vial, but did not recover. The control vial itself had an odor not unlike that of weak chloroform when this ant was placed into it, the odor presumably from the experiment ant of (3), introduced into the vial at 3.30 P. M. and which together, with its control, was normal at seven o'clock.

(5). At 10.28 A. M., May 19, a healthy ichneumonid was introduced into the vial containing the dead bug; it was in convulsions after two minutes, the convulsions ceasing in apparent death after seven minutes. Removed at 5 P. M. and did not recover. No control.

(6). At 10.35 A. M., May 21, 1909, an adult of *Conotrachelus nenuphar* Herbst, in the protective position was introduced into the vial containing the dead *Brochymena* and its odor. The weevil showed no change for twelve minutes, after

which it began to relax gradually, turning upon its back at eleven o'clock. It was then slowly moving its legs. This movement continued for some time until at 1.10 P. M. the true attitude of death was assumed. The weevil was in a stupor and to all appearances dead. At 6 P. M., or after about seven and a half hours exposure, it was removed to a clean vial. Complete return to normal health had occurred by 7 A. M., May 22. At that hour it was reintroduced into the experiment vial, upon which it did not fully assume the well known protective attitude, one of the legs being extended to grasp the strip of filter paper upon which it was lying. This position continued until visible relaxation commenced at eight o'clock and which was distinct at 8,10 A. M. and complete forty minutes later when the beetle was upon its back in slow convulsions. At 4 P. M. slight symptoms of life were present. The curculio was removed at 10 A. M., May 23, to a clean vial. It had fully recovered within twenty-four hours. Controls unchanged.

(7). At 2.40 P. M., May 24, 1909, a recently emerged female of *Habrocytus thyridopterygis* Ashmead was introduced into the vial, a similar adult retained as a control. The parasite commenced to show symptoms of approaching stupor at 2.46 P. M., but up to 3 P. M. it was still able to walk slowly, showing its uneasiness, however, by remaining inert most of the time and by strained movements of the abdomen, indicating difficulty in breathing. It was upon its back, apparently very weak, by 4.30 P. M.; at that time it was unable to locomote, though making efforts to do so; its fore wings were spread. Death had not occurred up to 6 P. M., but by the following morning the parasite was dead. The control remained normal. The odor of the bottle at the termination of this experiment was perceptibly weaker.

THE POISONOUS NATURE OF THE ODOR OF A PHYMATID.

(1). An adult phymatid captured on Evening Primrose in an orchard and at once confined in a vial, on July 15, was violently shaken up at 9.45 A. M., July 20 (it had not been fed in the meanwhile), and at 9.50 A. M. an adult of the beetle

Chlamys plicata Fabricius was introduced; a similar control. Both beetles were in their protective attitude when added to their respective vials and remained unchanged after introduction. The adult of the experiment first showed movement, regaining its feet at 9.55 A. M.; the control beetle making a similar movement at 10 A. M. Both remained normal up to 10 A. M., July 26, at which time the bug was dead. No effect.

(2). An adult phymatid captured at 9 A. M., May 12, 1909, on an apple leaf, was confined in a vial with an adult chrysomelid, captured a few minutes later. Both were dead after one and a half hours. These deaths may have been caused by the odoriferous secretions of each insect acting on the other.

(3). The vial containing the odor of the insects in (2) was hastily emptied and then tightly corked. At 12.40 P. M., May 12, a worker of *Lasius niger americanus* was placed into it; controlled. After three-quarters of an hour the ant of the experiment was apparently dead and was removed to a clean vial. It was replaced by another at 12.35 P. M.; this worker was in convulsions by 12.55 P. M., on its back at 1.06 P. M., and apparently dead by 1.50 P. M. By 1 P. M. the first ant was recovering, but not yet able to walk. Both of the ants were then placed in the open air and both had recovered and crawled away by 3.30 P. M. Controls remained normal.

(4). A wingless viviparous female of *Aphis persicae-niger* E. F. Smith was introduced into the same vial at 1.57½ P. M., May 12. Controlled. The aphid of the experiment remained motionless, but that of the control was in normal motion from the start. The former was to all appearances dead by 3.30 P. M., dying in the same spot and position as when introduced; control healthy and active. The louse of the experiment was plainly dead, its body shriveled, by 8 A. M. the day following. The control then alive and active.

(5). At 8.30 A. M., May 13, an adult of the coccinellid *Megilla maculata* DeGeer was introduced into the vial; controlled. Both adults captured the same morning in an orchard. Upon introduction, the experiment beetle showed obvious

symptoms of annoyance and disturbance and within thirty seconds fell from the glass sides of the vial, spreading its wings and falling on its back beneath the strip of filter paper, which it feebly grasped by its contracted legs. After five minutes it had assumed the death attitude, lying on its back, feebly moving the legs. On the other hand, the control behaved normally, actively running over the sides of the vial. By 8.48 A. M. the adult of the experiment was apparently dead. At nine o'clock, after half an hour's exposure, it was removed to the control vial, upon which it commenced to give symptoms of recovery after twenty minutes. By the following morning it had fully recovered. At eleven o'clock on May 14 both adults were liberated, upon which they crawled away.

(6). At two minutes past nine o'clock on the morning of May 13, an adult male of *Bibio albipennis* Say was introduced into the vial, controlled by the *Megilla* in (5). Within two minutes it had fallen over upon its side in convulsions, and the death attitude was assumed at 9.05 A. M., with slight leg contractions still visible. Two minutes later to all appearances it was dead, no movements following thereafter. At 11 A. M. the next day, it was removed to the control vial. It did not recover.

The odor of this phymatid was easily recognized by the nostrils. It reminded one very much of ethyl ether mixed with butyric acid—a rancid sweetness, very sickening to the human being and not unlike that given off by some species of *Calosoma*.

Interpretation.

There can be little doubt from what has been recorded that the vapors emitted by certain Heteroptera are highly noxious to various forms of insect life, in many cases quickly stupefying some insects when the latter are exposed to them in an air-tight receptacle. In other cases death ensues. Under similar conditions Conradi (*Science*, New York, N. S., XIV, 1901, pp. 816-817; *id. ib.*, N. S., XIX, 1904, pp. 393-394) has recorded that toads are stupefied and sometimes killed—also salamanders—by the vapors emitted by the common *Anasa*

tristis DeGeer; that the protective odor of *Euschistus fissilis* sometimes killed the hardy weevils *Anthonomus grandis* Boh. in the adult stage (at other times failing to do so), and that the vapors emitted by *Brochymena annulata* killed adult muscids and stupefied a centipede but were variable in their effects. That variation of the efficiency of these secretions occurs fulfills the expectations, but has not of course been fully measured by these experiments, if measured at all. The end result, namely actual protection, after all, is the only measure of efficiency in this respect, since the fact that the protective vapor is seriously injurious to one species of insect and not to another, under the unnatural conditions of these experiments is no criterion upon which to state that it affords protection against the one and not against the other. Because a toad is killed once and not another time, under the same stated conditions, is no reason whatever for stating that variation in the protective efficiency of the vapor in question occurs. The actual protection must consist in being distasteful or obnoxious, not in causing serious injury, stupor or death to the attacking animals, since the latter must involve, under natural conditions, actual handling or even swallowing of the protected insect in order that the protective vapor would have time to be effective, even if then effective. In the case of these evil-smelling Heteroptera, however, birds and amphibians must be the enemies to be feared and it is in giving the individuals of attacking species of these animals the memory impression of distastefulness that the protection consists. It works through the memory of the young attacking animals, not stupefying or killing them but giving them such an experience of unpalatableness that they soon learn to avoid attacking. Therefore, it is obvious that the experiments recorded by Conradi and myself show no more than what is stated in the first three sentences of this paragraph and have little or no bearing on the relative efficiency of the protective odors in question.

The foregoing experiments were performed in a field laboratory at Centralia, Illinois, U. S. A.

Observations on Uleela Rubs. (Dipt.).

By E. P. Felt, Albany, N. Y.

This genus was erected in 1908* for a remarkable, tailed, midge larva, which latter was described as *Uleella dalbergiae* and is therefore the generic type. The adult was then unknown. Through the courtesy of W. H. Patterson, formerly of the Agricultural School, St. Vincent, B. W. I., specimens of practically identical larvae and adults were received. We deem it advisable to place on record the generic characters of the image at this time as well as to correct two earlier provisional generic references.

Adults of the genus *Uleella* have fourteen cylindric subsessil antennal segments, the distal segment of the female reduced while the circumfili in the male are large and very irregular. The palpi are triarticulate. The third vein unites with the margin at the apex of the wing. The terminal clasp segment of the male is subapical and serrate distally, while the ovipositor is short with feebly chitinized plates and a moderately stout variably chitinized terminal portion.

The slight reduction of the female antennae and of the palps is along the same line, though not carried so far, as obtains in *Asphondylia;* the terminal clasp segment indicates an affinity with *Cincticornia,* while the circumfili are nearly identical with those of *Schizomyia.* This genus is an exceedingly interesting synthetic type.

Uleella pisonifolia n. sp.

This species was reared by W. H. Patterson, then of the Agricultural School, St. Vincent, presumably in June, 1911, from leaf galls on *Pisonia nigricans.*

Gall.—An irregularly oval leaf swelling 2-3 mm. long, the insects escaping through a circular orifice at one extremity.

Larva.—Length, 1.5 mm. The young larva is cylindric, white, with a small, moderately broad head, the antennae short and stout. The breast bone is feebly chitinized, broad, tapering anteriorly and broadly emarginate. The fourteenth segment has a diameter half that of the

* Rubsaamen, E. H. Marcellia, 6; 120-21.

preceding and bears a long, stout, irregularly annulate conical process distally. Moderately well developed pseudopods occur on the venter of the sixth to the thirteenth segments inclusive. Older and apparently nearly mature larvae are stouter and yellowish brown.

Pupa.—Length, 2 mm., moderately stout, yellowish orange, cephalic and thoracic horns distinct, the latter slender. The sixth, seventh and eighth abdominal segments dorsally with a sparse basal row of stout papillae each with a chitinous apex, terminal segment with one small median and two submedian pairs of chitinous processes; abdominal sclerites thickly set with chitinous points.

Male.—Length, 1.75 mm. Antennae as long as the body, sparsely short haired, fuscous yellowish, fourteen segments, the fifth with a stem one-fourth the length of the cylindric basal enlargement, which latter has a length thrice its diameter, slight constriction near the basal third, basal, sub-basal and apical whorls of short stout, setae and high, irregular circumfili, resembling those of *Schizomyia;* terminal segment somewhat produced, with a length thrice its diameter. Palpi: First segment small and irregular, the second broadly oval and the third shorter than the second, oval. Mesonotum dark reddish brown. Scutellum and postscutellum fuscous yellowish. Wings hyaline, costa fuscous straw, the third vein uniting with the margin at the apex of the wing. Halteres probably fuscous yellowish. Coxae and legs yellowish, the tarsi somewhat fuscous, claws simple, slender, evenly curved, the pulvilli about half the length of the claws. Genitalia, basal clasp segment stout, narrowly conical, the apex subacute, terminal clasp segment subapical, its apex pectinate; dorsal plate short, divided, the lobes broadly oval, ventral plate short, broadly and roundly emarginate, the lobes broad, broadly rounded.

Female.—Length, 1.75 mm. Antennae about half the length of the body, rather thickly haired, fuscous yellowish; fourteen segments, the fifth with a stem one-fourth the length of the cylindric basal enlargement, which latter has a length twice its diameter; terminal segment with a length one-fourth greater than its diameter. The tip of abdomen not expanded; ovipositor short, the apical portion broad and weakly chitinized; ventrally there is a pair of narrowly triangular, feebly chitinized plates.

Type, Cecid, a2230.

The most marked difference between this form and the closely allied *U. (Bruggmanniella) pisoniae,* Felt, is to be found in the relative development of the ovipositor. The allied *Bruggmanniella mexicana,** Felt, is also referable to the genus *Uleella.*

* 1911, Journ. Econ. Ent., 4: 547.

Standards of the Number of Eggs laid by Insects—X.*

Being Averages Obtained by Actual Count of the Combined Eggs from Twenty (20) Depositions or Masses.

By A. A. GIRAULT, Brisbane, Queensland, Australia.

14. LOCUSTA DANICA Linnaeus.

No.	Date 1912	No. counted per mass	Successive Totals	Av. per Egg Mass	Max.	Min.	Range	
1	Feb. 13	81	81	81.	81			
2		68	149	74.				
3		39	188	63.				
4		31	219	55.				
5		46	265	53.				
6		30	295	49.		30		
7		45	340	49.				
8		72	412	51.				
9		51	463	51.				
10		64	527	53.				
11		38	565	51.				
12		62	627	52.				
13		46	673	51.				
14		37	710	51.				
15		53	763	51.				
16		61	824	51.				
17		76	900	53.				
18		37	937	52.				
19		52	989	52.			81	
20		64	1053	53.			30	
20			1053	222.	81	30	51	Finals

The egg masses upon which these counts are based were obtained within a square yard of made soil along the Mulgrave Tramway (connecting Cairns with Babinda) just across the Mulgrave River from Nelson (Cairns District), North Queensland, Australia. It is tolerably certain in this case, that each mass represents the total depositions of a single female, since the deposition of one mass, apparently, always results in her death, seemingly, she being unable to withdraw her greatly stretched abdomen, which after death breaks off at the fourth abdominal segment, or else is twisted off by the struggles of the female. In two cases, 96 and 115 eggs were counted, but

*For the first nine of this series, see ENT. NEWS, 1901, p. 305; 1904, pp. 2-3; 1905, p. 167; 1906, p. 6; 1907, p. 89; 1908, pp. 4, 383; 1909, pp. 355-357; 1911, pp. 14-15.

I am not sure that these masses did not become mixed with a portion of another, so that they are not recorded above. An abundance of food was present.

On the other hand, each female may deposit two masses. I do not believe the females usually die as above described; in this case, so many thus dying may have been due to frantic efforts to escape upon the approach of a train. At any rate, I have seen egg masses, supposedly of this species, which did not contain in the upper part of the excavation, the mutilated abdomen; moreover, numerous dead females on the ground nearby showed no mutilation whatsoever.

Certain Generic Names in Phoridae (Dipt.).

By J. R. MALLOCH, Bureau of Entomology, Washington, D. C.

There has been, and is, considerable confusion in the *Phoridae* with regard to the generic names, and having, during the last seven years, done considerable work in this group, I have, like others, been impressed with the necessity for something like a definite arrangement of the genera and a decision as to the validity of the various generic names used.

If we leave out of consideration the *Bibio florea* of Fabricius (Ent. Syst. IV, 255, 8, 1794), which may, or may not, be synonymous with *Trineura abdominalis*, Fallen, the first species to be described was *atterima*, Fab. (l.c. 334, 93) under the generic title *Musca*. In 1802 Latreille erected the genus *Phora* with *Musca aterrima* Fabr. as the type (Hist. Nat. d. Crust. et d. Ins. III, 464, 1802). In 1803 Meigen created *Trineura* with the same species as type (Illiger's Mag. f. Ins. II, 276, 88, 1803). Thus *Trineura*, Mg., is a synonym of *Phora* Latr., which is the name that must be given to the genus having *aterrima* as type, *i. e. Trineura* in the present acceptance of the catalogs and authors. Lioy (Atti, Istit, Veneto, ser. III, X, 1864) attempted to subdivide the group, and owing to his imperfect knowledge of the species added very considerably to the confusion (when taken seriously). I have had occasion to examine his paper while engaged upon my work in connection with

the *Phoridae* in the U. S. National Museum and it may prove of interest to state just what this paper contains.

Phora Latr. is described as having the frons armed with reclinate bristles, the legs with setulæ and the wings with costa ciliate. The "marginal vein" is bifurcate, and the "submarginal vein" is prolonged towards the extremity of the wing. The median vein is straight.

He gives as his first species *Phora flavicornis,* Mcq., which is a synonym of *maculata,* Mg. The accepted type I believe would be this species but the name *Phora* being that used for another genus of course is inapplicable here. The other species in his genus are *P. flavipalpis* Mcq., *scapularis* Mcq., *vicinia* Mcq., *fuscipes* Mcq., and *rufa* Fab., which are all unrecognizable species: *fuliginosa* Mg. = (*Gymnophora arcuata* Mg.?), *pulicaria* Mg., *flava* Mg., *rufipes* Mg., *lutea* Mg., *nigra* Mg. and *pusilla,* Mg. The last five species have the postantennal bristles proclinate and belongs to *Aphiochaeta.* He also gives *bicolor,* Mg., which is a synonym of *lutea,* and *pallipes* Latr., *vulgaris* Fln. and *annulata* Mg., which are synonyms of *rufipes.* It is evident that he did not know the species and that which applies to this genus is equally applicable in the others.

Trisometopia, which has *Trineura thoracica* Mg. as type, is given as having the frons with "transverse row of bristles directed forward." The other characters are as in *Phora. Thoracica* has no proclinate frontal bristles.

Obelosia is said to have the hind tibiæ furnished with minute setulæ. The type *Phora rufipennis,* Mcq., is an unidentified species, but evidently an ordinary *Aphiochaeta.*

Anevrina is given as having the face with an impressed line, the legs armed with setæ, posterior tibiæ ordinarily very spinose, and the costa slightly ciliate. The anal vein is also given as absent. The type is *Phora urbana,* Mg., which has the anal vein complete and distinct, and the other species *opaca,* Mg., has the anal vein incomplete but has the hind tibiæ entirely bare.

It is not necessary to deal with the other genus *Diploneura* in this paper as the three species are all in the unrecognizable category. I had thought that it might be possible to use some

of the names proposed by Lioy in place of *Phora* for the spined-leg species left nameless through the substitution of *Phora* for *Trineura,* Meigen, but I find on a perusal of his paper that such a course is impossible.

It will be necessary to resort to later attempts at sub-division for generic names for the group.

In 1898 Dahl created a genus—*Dorniphora*— for the reception of one species—*dohrni* Dahl—(Sitzb. Ges. Natf. Fre., Berl., 188) and since then other species have been added to it until there are about ten species that may be classed as congeneric with the original type, most of which had been known, but not considered as generically distinct from those in *Phora.*

In 1908 (Jour. Nat. Hist. Soc. Glas.) I subdivided *Phora* into five genera. The names of some of these genera I afterwards discovered were preoccupied and in my paper on the *Phoridae,* now ready for the press, I have altered the names of those. It will thus be necessary to use those names which I originally proposed as subgenera in place of *Phora.* They are, I believe, as near an approach to a natural arrangement as it is possible to obtain with our present limited knowledge of the group, and will facilitate the study of the species, if they serve no other useful purpose. In the end this is really what genera are generally considered as being constructed for rather than to indicate their position in nature, though I do not subscribe to that.

N. B. It may be as well to state that the "marginal vein" of Lioy is the third longitudinal vein, and that the "submarginal vein" is the fourth vein, *i. e.* first thin vein.

SCHOLARSHIP IN ENTOMOLOGY.—Mrs. H. M. Bernard. of London, has arranged with Professor Kellogg to establish a small scholarship in the department of entomology at Stanford, to aid an advanced student for two years in an investigation of some problem in insect evolution. The scholarship will yield one hundred dollars a year besides an additional sum to pay all laboratory fees. Mrs. Bernard is the widow of the English biologist, Henry M. Bernard, a student of Ernst Haeckel, at Jena, an authority on the corals and an independent investigator of evolution problems.—*Science.*

The Mallophagan Genus Heterodoxus Le Seuëf and Bullen.

By JOHN HOWARD PAINE, Stanford University, California.

The genus *Heterodoxus* was founded in 1902 by S. A. Le Souef and H. Bullen (†) for a Mallophagous parasite from the kangaroo. The authors say:

"This insect . . . . is interesting on account of its being only the second two-clawed parasite of the family Liotheidae which has been found on a mammal.

" . . . . . The insect under consideration . . . closely resembles the sub-genus *Menopon*, but as that sub-genus has been regarded by former writers as being exclusively confined to birds, in order that there may be no confusion we have determined to found a new genus, *Heterodoxus*, for it."

The authors fail to point out characters which would separate, structurally, *Heterodoxus* from certain species of *Menopon*, several of the latter genus having been described from mammals (‡) showing that the belief that two-clawed *Mallophaga* are strictly confined to birds is not founded on fact.

Specimens of *Mallophaga* taken from a dog in Berkeley, Cal., were sent to this laboratory by Professor W. B. Herms, of the University of California. They resemble closely Le Souef & Bullen's *Heterodoxus macropus*, specimens of which, sent to this laboratory by Mr. Le Souef, are at hand. Upon examination of the two lots, characters were at once noted that seem to separate them from all other genera of *Mallophaga*.

I offer the following, therefore, as an account of the structural characters distinguishing this genus, which so far contains but the two species here mentioned.

(†) Le Souef & Bullen: Description of a Mallophagous Parasite from the Kangaroo.—VICTORIAN NATURALIST, Vol. XVIII, No. 10, p. 159, Feb. 6, 1902.

(‡) Kellogg & Paine: Mallophaga from Birds and Mammals.—ENT. NEWS, Vol. XXI, pp. 459-463, 1910.

Genus **Heterodoxus** Le Souef & Bullen.

Resembles certain species of *Menopon* in having the many spines characteristic of mammal-infesting Liotheidae, but dif-

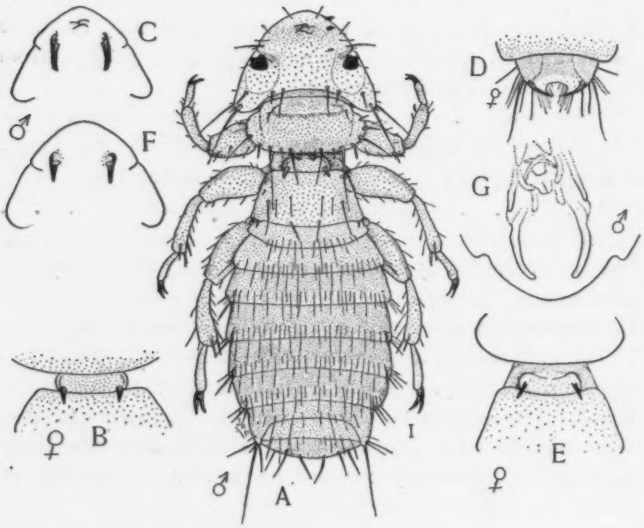

Fig. A. *Heterodoxus armiferus Paine*, ♂.
Fig. B. *Heterodoxus armiferus Paine*, mesothorax of ♀.
Fig. C. *Heterodoxus armiferus Paine*, head of ♂ showing ventral hooks.
Fig. D. *Heterodoxus armiferus Paine*, last segment of ♀.
Fig. E. *Heterodoxus macropus Le Souef & Bullen*, mesothorax of ♀.
Fig. F. *Heterodoxus macropus Le Souef & Bullen*, head of ♂ showing ventral hooks.
Fig. G. *Heterodoxus macropus Le Souef & Bullen*, last segment of ♂ showing genitalia.

fers from this genus and all others in having a distinct mesothorax. Head conical, broader than long, not longer than broad as characterized, on the basis of Le Souef's description,

(‡) V. L. Kellogg: Mallophaga, Genera Insectorum, 66 Fascicule, 1908.

in Kellogg's key to the *Mallophaga;* (‡) front rounded, sides straight, the ocular emarginations being completely filled; ocular fleck prominent; a pair of heavy hook-like spines on the under side. Thorax well developed. Mesothorax a distinct segment, much smaller than the pro- or metathorax. Legs and abdomen well developed. Mammal infesting, probably characteristic of dogs.

Heterodoxus macropus Le Souef & Bullen (Figs. E, F, G).

Four specimens of this species, two males and two females, from a black Wallaby (Victoria) were kindly sent by Mr Le Souef. The species is well described in the authors' paper before mentioned except for the omission of reference to the mesothorax. This segment is small, consisting of a narrow, short plate on the dorsum with a short heavy spine on each side; sides rounded. (Fig. E.)

DIMENSIONS.

	Length		Width	
	Male	Female	Male	Female
Head	.42	.45	.62	.66
Prothorax	.29	.30	.56	.60
Mesothorax	.13	.14	.20	.22
Prothorax	.29	.30	.56	.60
Abdomen	1.44	1.86	.96	1.06
Total	2.68	3.00		

Dr. G. Enderlein has described a parasite from a South African dog† under the name *Menopon spiniger*. His description and figure, however, both agree so closely with our specimens of *H. macropus* that it is impossible to separate the two species. Owing to priority therefore, *M. spiniger* becomes a synonym. Thus we have both species of the genus *Heterodoxus* occurring on the dog, which animal is probably its characteristic host.

†Enderlein, G., Anopleuren & Mallophagen; Schultze, Forschungsreise in Sudafrika, II; Jenais-Denkschr. XIV, 1909.

Heterodoxus armiferus n. sp. (Figs. A, B, C, D).

Four specimens, one male and three females sent by Professor W. B. Herms, collected from a dog (Berkeley, Cal.). One can scarcely see how two such closely related forms can come from hosts so widely separated, both geographically and systematically unless by some process of "straggling." This species generally resembles *macropus,* but is much smaller and the abdomen of the male is truncate.

Description of male: Head conical, broader than long; clypeus slightly angled on the meson and rounding on the sides; temples straight laterally, rounded narrowly at the posterior angles; occiput concave; ocular emarginations lacking, being completely filled by the large eyes; ocular fleck large, prominent, jet black. Two hook-like spines on under side of head (Fig. C), more developed than in the preceding species (Fig. F); clypeal hairs fine, inconspicuous, except for one long spine just before the eye; eye with one short spine on the surface; temples with two long spines on the angle and several short ones; occiput with short heavy spines and two longer, lighter ones. Thorax well developed; prothorax laterally and posteriorly rounded, with a row of strong spines on those margins; mesothorax small but distinct (Figs. A & B), with sides rounded and a short heavy spine on each side; metathorax trapeziform with posterior margin slightly convex; a number of spines on the margin and surface. Abdomen almost quadrilateral; last segment broad, truncate, slightly rounded; a row of closely set spines across each segment, long and short spines alternating. Last segment of female with forceps-like appendages (Fig. D).

DIMENSIONS.

	Length		Width	
	Male	Female	Male	Female
Head	.38	.40	.56	.58
Prothorax	.22	.22	.49	.51
Mesothorax	.10	.10	.20	.20
Metathorax	.24	.26	.48	.50
Abdomen	.90	1.12	.72	.81
Total	1.76	1.98		

As some of the segments overlap there is a discrepancy between the total length and the sum of the various lengths.

This paper was prepared in the entomological laboratory of Stanford University.

ENTOMOLOGICAL NEWS.

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PHILADELPHIA, PA., OCTOBER, 1912.

The Second International Congress of Entomology is a thing of the past. As may be seen from the account published under "Doings of Societies" on another page, the actual attendance at Oxford was larger than that at Brussels, although the numbers of members (and therefore of subscriptions) was not as great. The Third Congress is to meet in Vienna, which will be a disappointment to many entomologists in America, but the American invitations made a great impression and we entertain high hopes of bringing the Congress to the United States and Canada in 1918. The Congress, wisely, did not act on the question of nomenclature itself, but provided machinery which ought to accomplish that world-wide consideration and agreement on this difficult question which is so desirable. Personal acquaintance among entomologists of different countries was largely fostered by this Congress and this alone fully justified the existence of these international gatherings.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

NOTES OF MEXICAN BARIDS (CURCULIONINAE.) COLEOP.—Dr. A. Fenyes has recently sent to the British Museum a small collection of 42 species of Barids from Mexico, mostly collected by himself in Vera Cruz. These insects have been handed over to me for determination, and though there is nothing new amongst them, there are several interesting forms, including three additions to the Mexican list. The additions are: *Cyrionyx exiguus*, Ch., from Orizaba* and Matamoros Izucar*; *Geraeus undatus*, Ch., from Cordoba*; and *Eurhinopsis viridicolor*, Ch., from Cordoba*; the types of all of which came from more southern localities in Central America. The other species of interest are *Pseudorhianus imprettus*, Ch.; one male with the characteristic prosternal tuft of hairs, from Cuernavaca*; *Geraeus arcuatirostris*, Ch., from Orizaba*; *G. dispositus*, Ch., one pair from Cuernavaca* (described from a single ♂; the ♀ has the rostrum abruptly narrowed beyond the middle, (as in various other species of the genus); *G. bipustulatus*, Ch.,* Cordoba; *Cylindrocerinus tubifer*, Ch., two specimens, Cuernavaca; *Anisorrhamphus squamiventris*, Ch., Cordoba*; *Pseudobaris gibbicollis*, Ch., Jalapa*; *P. dentipes*, Ch., Cuernavaca and Matamoros Izucar*; *P. cylindricollis*, Ch., Matamoros Izucar* and Puebla*; *P. leucostigma*, Ch., Cordoba; *P. cribrella*, Sol., Cordoba* and Orizaba*; *Dolichobaris schwarzi*, Ch., Cordoba*; *Baris corrusca*, Boh., Puebla* and Atlixco*; *B. implana*, Ch., Cordoba*. The localities marked with an asterisk are additional to those given in the Biol. of Centr.-Am. Coleopt. Vol. IV. part 5.—G. C. CHAMPION, Woking, England.

A COSTA RICAN INDIAN SUPERSTITION CONCERNING A MECISTOGASTER DRAGONFLY (ODONATA).—[In February, 1912, in the peninsula of Nicoya, Costa Rica], only once we saw a single *Mecistogaster*—in Rio Bueno Vista. In this place the forest is so dense that it was impossible to catch it. I returned several times to the same place, but no other specimen was seen. People here say that this *pipilacha* (*Mecistogaster*) is common in some years. An old man told me that this was not a *pipilacha* at all, but a *human spirit*, because they have not head or body, only wings! When a person dies, the spirit (soul) begins to fly for some days in the woods and nobody can disturb it. It seems to me that this is an Indian belief that is worth noting.—J. FID. TRISTAN, San José, Costa Rica.

Entomological Literature.

COMPILED BY E. T. CRESSON, JR., AND J. A. G. REHN.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), excluding Arachnida and Myriapoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species, will be recorded. The numbers in **Heavy-Faced Type** refer to the journals, as numbered in the following list, in which the papers are published, and are all dated the current year unless otherwise noted. This (*) following a record, denotes that the paper in question contains description of a new North American form.

For record of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington.

1—Proceedings, Academy of Natural Sciences of Philadelphia. **4**—The Canadian Entomologist. **5**—Psyche, Cambridge, Mass. **7**—U. S. Department of Agriculture, Bureau of Entomology. **8**—The Entomologist's Monthly Magazine, London. **9**—The Entomologist, London. **10**—Nature, London. **11**—Annals and Magazine of Natural History, London. **15**—Biologia Centrali-Americana, London. **22**—Zoologischer Anzeiger, Leipzig. **35**—Annalen, Societe Entomologique de Belgique. **36**—Transactions, Entomological Society of London. **37**—Le Naturaliste Canadien, Quebec. **38**—Wiener Entomologische Zeitung. **40**—Societas Entomologica, Zurich. **59**—Sitzungsberichte, Gesellschaft der naturforschenden Freunde, Berlin. **74**—Naturwissenschaftliche Wochenschrift, Berlin. **79**—La Nature, Paris. **84**—Entomologische Rundschau. **86**—Annales, Societe Entomologique de France, Paris. **89**—Zoologische Jahrbucher, Jena. **97**—Zeitschrift fur wissenschaftliche Zoologie, Leipzig. **102**—Proceedings. Entomological Society of Washington. **105**—Videnskabelige Meddelelser, Naturhistoriske Forening i Kjobenhaven. **119**—Archiv fur Naturgeschichte, Berlin. **135**—Verhandlungen. Gesellschaft deutscher Naturforscher und Artz. Leipzig. **143**—Ohio Naturalist. **157**—Meddelanden, Societas pro Fauna et Flora Fennica. Helsingfors. **160**—Internationale Reyue der Gesamten Hydrobiologie und Hydrographie, Leipzig. **166**—Internationale Entomologische Zeitschrift, Guben. **180**—Annals, Entomological Society of America. **184**—Journal of Experimental Zoology, Philadelphia. **189**—Pomona Journal of Entomology, Claremont, Cal. **191**—Natur, Munchen. **200**—Bulletin Scientifique de la France et de la Belgique, Paris. **204**—New York State Museum Bulletin. **211**—Popular Science Monthly, Lancaster, Pa. **236**—Boletin. Sociedad Aragonesa de Ciencias Naturales, Zaragoza. **237**—University of Colorado Studies. Boulder. **248**—Hawaii Agricultural Experiment Station, Honolulu. **264**—Boletin del Min-

isterio de Agricultura, Buenos Aires. **269**—Memoirs, Department of Agriculture in India, Entomological Series, Calcutta. **279**—Jenaische Zeitschrift fur Naturwissenschaft, Jena. **291**—Proceedings of the Staten Island Association of Arts and Sciences, Lancaster, Pa. **322**—Journal of Morphology, Philadelphia. **340**—Transactions of the Linnean Society of London, 2nd Ser., Zoology. **342**—Pennsylvania Health Bulletin, Harrisburg. **368**—The Monthly Bulletin of the State Commission of Horticulture, Sacramento, Cal. **369**—Entomologische Mitteilungen, Berlin-Dahlen. **379**—Proceedings of the International Zoological Congress. **381**—Experiment Station Record, Washington, D. C. **386**—Bulletin, University of New Mexico, Biological Series, Albuquerque. **387**—Bulletin, Division of Entomology, Dept. of Agriculture, Experimental Farms, Dominion of Canada, Ottawa. **388**—Verhandlungen der Schweizerischen Naturforschenden Gesellschaft. **389**—Archivos du Museu do Rio de Janeiro. **390**—Zoologischer Beobachter, Frankfurt a. Main. **391**—Annual Report of the Laguna Marine Laboratory at Laguna Beach, Cal.

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lxxx, 492-502. **Pratt, F. C.**—Insects bred from cow manure, **4,** 1912, 180-184. **Riede, E.**—Vergleichende untersuchung der sauerstoffversorgung in den insectenovarien, **89,** xxxii, 231-310. **Sanderson, E. D.**—The influence of minimum temperatures in limiting the northern distribution of insects (abstract), **379,** vii, 604-605. **Wheeler, G.**—On the dates of the publications of the Entomological Society of London, **36,** 1911, 750-767. **Ziegler, H. E.**—Die gehirne der insekten, **74,** xi, 433-442.

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parasitic bees (Coelioxys), **4,** 1912, 166-170 (*). Some bees from Guatemala, **5,** xix, 105-106. New and little known bees, **9,** 1912, 175-178. Descriptions and records of bees—XLV, **11,** x, 21-31. **Crawley, W. C.**—Parthenogenesis in worker ants, with special reference to two colonies of "Lasius niger," **36,** 1911, 657-663. **Donisthorpe, H. K.**—Further observations on temporary social parasitism and slavery in ants, **36,** 1911, 175-183. **Donisthorpe & Crawley.**—Experiments on the formation of colonies by "Lasius fuliginosus" females, **36,** 1911, 664-672. **Elliott & Morley.**—On the hymenopterous parasites of Coleoptera, 1st supplement, **36,** 1911, 452-496. **Enderlein, G.**—Beitrage zur kenntnis aussereuropaischer Ichneumoniden. II: Ophioninae. Die gattung "Thyreodon" und ihre verwandten, **22,** xxxix, 624-632. Neue gattungen und arten aussereuropaischer Braconiden, **119,** 1912, Abt. A, Heft 2, 38-41. **Foerster, E.**—Vergleichend-anatomische untersuchungen ueber den stechapparat der ameisen, **89,** xxxiv, 347-380. **Forsius, R.**—Zur kenntnis einiger blattwespen und blattwespenlarven, **157,** 1910-11, 77-78. **Hedicke, H.**—Beitrage zur kenntnis der Cynipiden, **84,** xxix, 81-82. **Linder, C.**—Les fourmilieres-boussoles, **379,** vii, 668-671. **Lovell, J. H.**—Bees which visit only one species of flower, **211,** lxxxi, 197-203. **Mann, W. M.**—Note on a guest of "Eciton hamatum," **5,** xix, 98-100. **Mitchell & Pierce.**—The ants of Victoria County, Texas, **102,** xiv, 67-76. **Morice, F. D.**—The terebrae of the Chalastogastra, or the saws of saw-flies, **36,** 1911, cxxvii-clv. **Rohwer, S. A.**—The sawflies (Chalastogastra) of Boulder Co., Colorado, **237,** ix, 91-104. **Strickland, E. H.**—The Pezomachini of No. Am., **180,** v, 113-140 (*). **Timberlake, P. H.**—A study of the biology of "Limnerium validum," **7,** Tech. Ser. No. 19, 71-92. **Turner, C. H.**—Sphex overcoming obstacles, **5,** xix, 100-102. **Wagner, H.**—Beitrag zur kenntnis der Apion-fauna Central- und Sud-Amerikas. Beschreibungen neuer arten, **119,** 1912, Abt. A, H. 2, 99-136. **Wheeler, W. M.**—New names for some ants of the genus "Formica," **5,** xix, 90. **Zavattari, E.**—Bemerkungen ueber die neotropischen Masariden, **119,** 1912, Abt. A, H. 2, 58-65.

ETUDES DE LEPIDOPTEROLOGIE COMPAREE, par Charles Oberthür. Rennes, Imprimerie Oberthür. Fascicules. I, Mars 1904, II, Octobre 1906; III, Juin 1909; IV, Avril 1910; IV bis. Décembre 1910; V (1re Partie), 1911; V (2e Partie), 1911.

This large, important and expensive work is of great interest to naturalists everywhere, especially philosophical naturalists. It is full of material for future bionomic work, and is teeming with useful and stirring suggestions. It is illustrated with 85 mostly colored lithographic plates of a high grade of execution, by J. Culot.

In the first *fascicule* Oberthur says that with the 21st livraison of Etudes d'Entomologie he had planned to close his publications on the Lepidoptera, and devote his time to the arrangement of his collection. But despite his resolutions he could not resist the temptation of again entering entomological activity; and the attraction of certain problems was too irresistible, so we have this magnificent series of *fascicules*. In fascicule III we have an important paper by Dr. Max Standfuss, the well-known experimenter of Zurich, first in German and then translated into French, on some results of experiments on the reproduction by mutations of Lepidoptera on the basis of Mendel's law and de Vries' mutation theory. It is on *Aglia tau* and aberrations, the Bombycid.

A great portion of the *fascicules* is taken up with an extended catalogue and comparison of the fauna of France and Algeria; of great interest to the zoogeographer; and is replete with facts which will be used by some coming generalizer; the amassing of facts is the first requisite in the large and important generalizations.

A considerable part of the preface of *fascicules* III and IV are taken up with digressions on the infinite power and wisdom of God in the works of Creation; "L'évidence de l'intervention du Créateur, seul maitre de la puissance infinie, apparait, dans les plus petites chases, comme le résultat nécessaire de l'observation de la Creation elle-mème, et la raison s'oppose à ce que la moindre restriction soit admise en ce qui concerne l'action crèatrice du Très-Haut. Seulement, comme le rappelle Linne; Pauca Laec vidimus operam Dei, multa obscundita sunt maiora his." He also has a good deal to say, in a strong way, against the habit of publishing descriptions without figures; "Il important, me semble-t-il, d'oser signaler a' l'attention des Naturalistes le coté mercantile de l'opération," les descriptions sans figures sont un perpétuel sujet de trouble et de doute." He concludes his long preface to *fascicule* V with the rule: "Sans bonne figure à l'appui d'une description, pas de nom valable; dès lors la priorité du nom apparient au premier Iconographe plutôt qu'au premier Description."

In the fascicule V, 1911, are several important contributions. The first is on the Relations of the Lycænidae and Ants, by Harold Powell; then the continuation of the comparison of the lepidopterous fauna of France and Algeria. In his lengthy discussion of *Lygaena transalpina*, we have some interesting and pleasing poetical digressions. Two final short essays, by the author and Alphéraky are on the always interesting theme of subspecies and morpha, which we are informed will be further discussed at the Entomological Congress at Oxford in 1912, as well as concerning the publication of descriptions without figures. He is not in much sympathy with these hypothetical discussions. His ideas can be seen from the following extract: "Dans ma collection de Lépidoptéres, plus d'un million de specimens ont ete classes et ranges

par mes soins. M'est-il permis aprés cela trop de temerite, de me considérer comme relativement assez bien renseigné sur la matiere entomologique? Cependent je déclare n'avoir jamais vu de subspecies, selon le sens attribué à se mot. J'ai vu des Variétes geographique, des Races et Formes locales, des Aberrations." But the reviewer is certain Oberthür is not very clear on this subject. Alpheraky's paper is a review of an extended one by Séménov Tian-Shansky, published in Russian in 1910, and by R. Friedländer in German.

Alpheraky En concluont ces notes, noms, mona croyons de notre devoir de recommander le mémoire de M. Sémenoz Tian-Shansky à l'attention de tons ceux qui s'interressant à la Classification du régne animal, car ils y trouveront ample matiére à réflexion et à meditation."

Finally the second part of fascicule V has a very valuable contribution: Revision iconographique des Espéces de Phalénites (Geometræ) enumerées et decrites par Achille Guenée in the Species general des Lépidoptéres, 1857; with colored illustrations; this is of great interest to systematic lepidopterists generally, and of course to the numerous students of geometridæ in this country. Our ideas of certain species may change with colored illustrations of the types before us. There is a sympathetic sketch of Guenée's life, and a reprint of "Ecrits humoristiques de Guenée;" showing the latter's fine literary style and broad-mindedness; it is further entitled, "Les Entomologistes peints par eux-mimes." The superb photographic reproductions of scenes in Algeria and the Pyrenees are of interest to the zoogeographer; the photos from life of the larvæ of various species and the beautiful lithographs of J. Culot make a very valuable volume.—FORDYCE GRINNELL, JR.

Doings of Societies.

THE SECOND INTERNATIONAL CONGRESS OF ENTOMOLOGY.

The sessions of the Second International Congress of Entomology were held in the University Museum, Oxford, England, from August 5th to August 9th, 1912, inclusive. The first extensive meeting of the members with each other, however, was at an informal reception given by Oxford entomologists in the Dining Hall of New College, at 8.30 p. m., August 4th. In spite of its name, this Hall dates from the latter part of the fourteenth century; its height, its great, stained-glass windows, the portraits of eminent past members of the college on its walls and, above all, its historic associations combined to make it a most charming and appropriate gathering place

for a scientific congress. On entering, each person was welcomed by Prof. Edward B. Poulton, President of the Congress, and soon found himself or herself in the midst of old and new friends. Each one received a guide-book to Oxford to which was prefaced a specially written "Sketch of the Entomology of the Oxford District" by Commander Walker, Secretary of the Entomological Society of London, and "An Account of the Hope Department" by Professor Poulton.

The Congress was formally opened in the lecture room of the museum by President Poulton, at 10.30 a. m., August 5, Dr. G. Horvath, of Budapest, being Vice President. Dr. Malcolm Burr, of Dover, the General Secretary, was, unfortunately, detained at home by the illness of Mrs. Burr, but in his absence Mr. H. Eltringham ably discharged the functions of that difficult office, assisted by Mr. G. H. Grosvenor. Happily, Dr. Burr was able to join the Congress on the 8th and to remain with it until the 10th.

In his opening address, Professor Poulton warmly welcomed the members to Oxford, told of its many entomological associations with the past, especially as they concerned the late Professor J. O. Westwood, and mentioned some of the collections of insects which are housed in this museum. He then exhibited and commented on a wonderful series of *Papilio dardanus* with reference to mimicry.

The Hon. N. C. Rothschild made a brief but earnest plea for "Nature Reserves" in Great Britain and Ireland, for the preservation of all forms of plant and animal life. Sympathetic remarks by speakers in various languages followed, telling of what had been accomplished in their relative countries toward this end.

The remainder of the program was:

August 5, 2. p.m.

SECTION 1. *Economic and Pathological.*—President, L. O. Howard, Washington; Vice-President, R. Newstead, Liverpool; Secretary, H. Scott, Cambridge, England.

Sir Daniel Morris Boscombe, on behalf of W. A. Ballou. "Some Entomological Problems in the West Indies." Occurrence *Phytalus smithi* Arrow, in Barbados, attacks of Root Borer on Sugar Cane,

Red Maggot, Flower Bud Maggot, and Leaf Blister Mite on Cotton, and control of certain insects by natural enemies.

Read on behalf of J. Dewitz. "Die Physiologie in der Schädlingsforschung."

R. Stewart MacDougall, Edinburgh. "*Heteroptera* and *Thripidae* as apple enemies."

SECTION 2. *Systematics and Distribution.*—President, C. N. Rothschild, Oundle; Secretary, Rev. G. Wheeler, London.

H. J. Kolbe, Berlin. "Die Differenzierung der zoogeographischen Elemente der Kontinente." In jedem Kontinent und in jeder Zone giebt es zoogeographische Elemente von ungleichem Werte. Diese sind das Resultat der Entwicklung während verschiedener geologischer Perioden.

W. Horn, Berlin. "Die Fortschritte des neuen Coleopterorum Catalogus von Junk-Schenkling."

August 6th, 10 a.m.

GENERAL MEETING. President, A. Lameere, Brussels; Vice-President, J. Van Bemmelen, Groningen.

J. H. Comstock, Ithaca. "The Silk of Spiders and its Uses." A description of the different kinds of silk spun by spiders and of the use of each kind. Illustrated by lantern slides made from photomicrographs of silk and from photographs of webs.

Rev. G. Wheeler, London, and G. T. Bethune-Baker, Birmingham. "Nomenclature, with a communication from the Entomological Society of London." (1) Proposal from Entomological Society of London for formation of International and National Committees. (2) Unofficial suggestions as to desirable restrictions. (This was referred to the Executive Committee.)

SECTION 1. *Evolution, Bionomics, and Mimicry.*—President, Y Sjöstedt, Stockholm; Vice-President, H. Skinner, Philadelphia; Secretary, L. Doncaster, Cambridge, England.

E. B. Poulton. "Messrs. C. A. Wiggins and Dr. G. H. Carpenter's researches in mimicry in the forest butterflies of Uganda."

R. C. L. Perkins, Honolulu. "The color groups of Hawaian Wasps."

The Rev. K. St. A. Rogers, British East Africa. "Mimicry in the two sexes of the E. African Lycaenid *Alaena picata*, E. M. Sharpe.'

August 6th, 2 p.m.

SECTION 1. *Nomenclature.*—President, E. B. Poulton; Vice-President, K. Kertész, Budapest; Secretary, K. Jordan, Tring.

M. Ch. Oberthür, Rennes. "Pas de bonne figure à l'appui d'une description, pas de nom valable."

To be read on behalf of Mr. L. B. Prout. "On the place of figures in descriptive Entomology."

SECTION 2. *Morphology and Anatomy.*—President, P. P. Calvert, Philadelphia; Vice-President, J. C. H. de Meijere, Hilversum; Secretary, R. S. Bagnall, Penshaw.

F. A. Dixey, Oxford. "Scent Organs in the Lepidoptera." The specialized scales which serve to distribute scent in many species may be either generally scattered over the wing-surface, or collected into patches. In the latter case there is a special supply of air tubes to the sockets of the scales.

G. H. Carpenter, Dublin. "The Presence of Maxillulae in Beetle Larvae." Demonstrates the presence of paired appendages (maxillulae) connected with the hypopharynx in certain larvae of the Coleoptera.

G. Horváth, Budapest. "Sur la construction de l'élytre des Cicadides."

I. P. Longinos, Navas Zaragoza. "Algunos organos de las alas de los insectos" (but given in French).

August 6, 8 p.m.

Illustrated lecture. S. A. Neave, Ingatestone. "Travels of an Entomologist in Eastern Africa."

August 7th, 10 a.m.

GENERAL MEETING. President, J. H. Comstock, Ithaca; Vice-President, the Hon. W. Rothschild, Tring.

J. Van Bemmelen, Groningen. "The Phylogenetic Significance of the Development of the Butterfly Wing."

J. W. Taylor, Horsforth. "The Distribution of life and its relations with Evolution and Phylogeny." The principles governing the laws of Geographical Distribution. Influence of Environment, Phylogeny, etc., and the need of Entomological investigation on these lines.

Leonard Doncaster, Cambridge, England. "Sex limited Inheritance in Insects." An account of the inheritance of characters which show sex-limited transmission in the Moth *Abraxas grossulariata* and the Fly *Drosophila ampelophila.* (with exhibition of *Abraxas* specimens).

SECTION 1. *Economic and Pathological.*—President, J. Jablonowski, Budapest; Vice-President, R. C. L. Perkins, Honolulu; Secretary, J. C. Moulton, Borneo. (Part of this sectional meeting was adjourned to the following morning.)

J. Jablonowski. "The destruction of *Stauronotus maroccanus* in Hungry," and "On the destruction of *Cochylis* and *Eudemis* in the vineyards."

A. G. L. Rogers. "The necessary investigation with relation to Insect and Fungus Enemies of Plants, preliminary to Legislation."

F. V. Theobald, Wye. "Aphides attacking Cultivated Peas, and the allied species of the genus *Macrosiphum.*"

SECTION 2. *Systematics and Distribution.*—President, Capt. Ch. Kerremans, Brussels; Vice-President, J. L. Navas, Zaragoza; Secretary, G. T. Bethune-Baker, Birmingham.

Rev. J. Waterston, Ollaberry. "On a new Scottish Parasite on *Procellaria.*"

A. Dampf. (absent). "Systematik, geographische Verbreitung und Phylogenie der Arten aus der *Hydroecia nictitans* Gruppe" (read by title only).

K. Jordan, Tring. "On *Arixenia,* an aberrant genus of Earwigs, its habits morphology and anatomy," and "On the viviparity of *"Polyctenidae."* (These two read at an adjourned meeting at 9 p.m.)

August 7th, Afternoon Excursions.

NUNEHAM, by kind invitation of the Rt. Hon. L. V. Harcourt, M. P., Secretary of State for the Colonies. By Steamer, leaving Folly Bridge at 2.30. Available for about 70 members.

BAGLEY WOOD, by kind invitation of the President and Fellows of St. John's College. By steamer leaving Folly Bridge at 2.30. Available for about 50 members.

August 8th, 10.00 a.m.

GENERAL MEETING.—President, E. J. G. Everts, The Hague; Vice-President, A. Handlirsch, Vienna.

A. Handlirsch. "Die geographische Verbreitung der Insekten in ihrer Beziehung zu Phylogenie und Palaeontologie."

SECTION 1. *Bionomics, Evolution, and Mimicry.*—President, the Rev. F. D. Morice; Vice-President, W. M. Wheeler, Cambridge, U. S. A.; Secretary, K. G. Blair, London.

H. St. J. K. Donisthorpe, London, and W. C. Crawley, London. "On the founding of Colonies by Ants."

W. M. Wheeler. "Observations on the Central American Acacia Ants."

H. Osborn, Columbus. "Insect Fauna of a Lake Shore."

SECTION 2. *Morphology.*—President, P. Speiser, Labes; Secretary, G. Meade-Waldo, London.

Frederick Lowe. "The Devolution of Wing Structures as shown in *Blattidae.*" 1. Giving the results of practical work, and describing a new method. 2. Giving measurements of the wings of a large series of Blattidae.

Dr. T. A. Chapman, Reigate. "Regeneration of the Legs in *Limantria dispar.*" Effects of the parts being lost at different stages and tendency to reduplication of parts.

August 8th, 2.00 p.m.

SECTION 1. *Nomenclature.*—President, E. Olivier, Moulins; Secretary, K. Jordan, Tring.

W. Horn, Berlin. "Protest gegen die Zulassung von Ausnahmen vom Prioritätsgesetze."

Ch. Kerremans, Brussels. "Nomenclature et Synonymie." Sur la nécessité de restreindre les noms donnés aux variétés et de les remplacer par une lettre ou un No. d'ordre.

Ernest Olivier. "The necessity for the Latin tongue for Entomological descriptions" (but given in French.)

SECTION 2. *Economic and Pathologic.*—President, G. Hewitt, Ottawa; Vice-President, V. Ferrant, Luxembourg; Secretary, H. Rowland-Brown, Harrow Weald.

Stephen A. Forbes, Champaign. "*Simulium* and Pelagra in Illinios, U. S. A." Results of studies of species, distribution and life histories of *Simulium* as related to new cases of pelagra in asylums.

Frederick A. Lowe. "How to kill that Fly."

F. W. Urich (absent). "The Biology of some Trinidad Mosquitoes, and notes on their control" (read by title.)

August 9th, 10.00 a.m.

SECTION 1. *Evolution, Bionomics and Mimicry.*—President, V. Kellogg, Stanford University; Secretary, H. H. Druce, London.

R. C. Punnett, Cambridge, England, on behalf of Mr. J. C. F. Fryer. "The Polymorphism of *Papilio polytes.*"

C. F. M. Swynnerton. (Communicated by Prof. Poulton.) "Pellets ejected by insect-eating birds after a meal of butterflies."

M. Pic (absent). "Le mélanisme chez divers *Cryptocephalus* paléarctiques" (read by title.)

A. H. Hamm, Cambridge, England. Exhibition of photographs of insects in resting attitudes in their natural surroundings.

SECTION 2. *Systematics.*—President, N. Banks, East Falls Church, Va.; Vice-President, A. v. Schulthess, Zurich; Secretary, J. E. Collin. Newmarket.

K. von Rosen, Munich. "Uber fossile Termiten."

P. Speiser, Labes. "Bemerkungen und Notizen zur geographischen Verbreitung einiger blutsangenden Insekten" and "Ueber die Variabilität geographische afrikanischer Bombyliden."

Philip P. Calvert, Philadelphia. "Progress in knowledge of the Odonata from 1895 to 1912." A statement of the advance of knowledge of the structure, life, development, geographical and geological distribution, habits, classification, and phylogeny of the *Odonata* in the period indicated.

August 9th, 2.00 p.m.

GENERAL MEETING.—President, E. B. Poulton; Vice-President, H. J. Kolbe, Berlin.

Adalbert Seitz, Darmstadt. "How does the insect see the world?" Results of biological experiments on the eye, and physiological remarks. Ultraviolet rays, colors, outlines, etc.

V. L. Kellogg, Stanford University. "Distribution and Species forming among Ectoparasites." Discusses the distribution, both geographical and host, of all the known species of *Mallophaga.*

The report of the Executive Committee was then read by sections and each section immediately acted on.

Invitations to hold the Third Congress in Frankfort-on-the Main and in Vienna were acknowledged, and letters from the American Association of Economic Entomologists and the Entomological Society of America, urges that the next session be held in the United States, were read. After discussion, the question was put to the whole Congress as to whether the next meeting should be in Europe or in America. A large majority, having voted in favor of the former, the Executive Committee then recommended Vienna as the place, and Dr. Anton Handlirsch as President of the Third Congress in 1915, and this was approved by the Congress without objection.

All of the following recommendations of the Executive Committee were unanimously adopted by the Congress.

As the result of action taken by the Economic and Pathologic Section, the formation of an International Commission on the prevention of importation of injurious insects from one country to another was recommended to the International Institute of Agriculture at Rome.

Messrs. Nathan Banks and Stephen A. Forbes, of the United States, J. F. Tristan, of Costa Rica, and E. M. Walker, of Canada, were added to the New World members of the Permanent Committee on International Entomological Congresses.

Messrs. E. T. Cresson, of Philadelphia, P. R. Uhler, of Baltimore, and Frey-Gessner, of Geneva, were named to fill the vacancies created by the decease of honorary members since the First Congress of 1910.

An International Committee on Entomological Nomenclature was named, consisting of Messrs. N. Banks (U. S. A.), C. J. Gahan (England), K. Kertesz (Hungary), F. Ris (Switzerland), S. Schenkling (Germany), H. Schouteden (Belgium), Y. Sjöstedt (Sweden), and K. Jordan (England), with power to add to their number. This International Committee is to enter into negotiations with the entomological so-

cieties of different countries to the end that National Committees on Nomenclature may be formed. The International Committee, in co-operation with the National Committees, is to consider the opinions and views of entomologists on all questions of the nomenclature of insects and what modifications of the rules of the International Commission on Zoological Nomenclature are necessary to meet the needs of Entomology; it is to communicate its conclusions to the Secretary of the same Commission and to take such steps as will insure representation of Entomology on that Commission.

The secretary of the Executive Committee (Dr. Burr) reported that the total number of members of this Second Congress was 201 (40 of this total being life members), of which 172, representing 23 nationalities, were present. The corresponding figures for the First Congress, at Brussels, 1910, were 201, 147 and 24.

President Poulton then delivered a farewell address, thanking all those who in one way or another had aided to make this Congress the success which all felt it to be, those present signifying their approval by continued applause. The President then received the thanks of the Congress and the General Meeting adjourned. A photograph of the Congress in Wadham College quadrangle was taken at 5 p. m.

In the evening, at 7.30, a largely attended banquet was held in the Dining Hall of Wadham College, dating from the early 17th century, and portraits of four members of this college who were founders of the Royal Society of London, with those of other famous alumni, looked down upon us from the walls. Appropriate toasts and brief speeches in four languages brought this enjoyable festival to a close.

Mention should be made of the exhibit of insects which were displayed in different rooms of the museum from time to time during the Congress. These were Pierinae, by Dr. F. A. Dixey; The African species of the genus *Acraea* (Lepid.), by Mr. H. Eltringham; Insects and their prey with special reference to the courtship of the Empidae, by Prof. Poulton and Mr. A. H. Hamm; Mimetic Groups, by Prof. Poulton; New British Thysanura; Collembola, Thysanoptera,

Mallophaga and Myriapoda, and Hawaiian Thysanoptera, by Mr. R. S. Bagnall.

On Saturday morning the great majority of the members left Oxford on a special train for Tring, at the invitation of the Hon. Walter Rothschild, where a procession of a dozen coaches conveyed the party from the railway station to his zoological museum. Private and public rooms were alike thrown widely open to our inspection. While the public exhibition rooms, containing an admirable collection of typical animals of all groups were appreciated, the members were naturally chiefly interested in the study collections of insects, now limited almost entirely to the Lepidoptera, estimated at one million specimens. A wonderful series of the genus *Ornithoptera* was specially set out for examination. In passing, it should be mentioned that the other study collection consists of a vast series of bird-skins.

A luncheon in Victoria Hall, Tring, a group photograph, a walk through the gardens and park of the estate, in which last rheas, deer and kangaroos roam at large, followed. Then the Congress, after hearty thanks to Mr. Rothschild for his hospitality, dispersed with best hopes and wishes for reunion in Vienna in 1915.

Those who were present at the Congress, in addition to those mentioned in the preceding program, were:

Great Britain and Ireland.—Annandale, R., Edinburgh; Arrow, G., British Museum, London; Bacot, A., Loughton; Beeson, Cyril; Bowater, W., Birmingham; Staff Surgeon and Mrs. Cameron, Mrs. Lee; Champion, G. C., Woking; Coney, Batcombe; Crampton, T. C., Glasgow; Dixey, Mrs. F. A., Oxford; Durrant, J. K., British Museum, London; Gardner, J., Hart; Gillanders, A. T., Alnwick; Gahan, C. J., British Museum, London; Griffiths, G. C., Bristol; Grosvenor, G. H.; Halbert, J. N., Dublin; Hartert, Dr. E., Tring; Hoar, T. F. P., Leighton Buzzard; Hoey, Dr. W., and Hoey, J. T. S., Oxford; Image, Prof. S. J., London; Janson, O. E. London; Jardine, N. K., Ashford; Jones, A. H., Eltham; Jordan, Miss, Tring; Joseph, E. G., Oxford; Kaye, W. J., Ditton Hill; Lace, O. H., Sheffield; Loesch, C., Dover; Longstaffe, Dr. G. B., London; Lyle, G., Brockenhurst; Marshall, G. A. K.; Meade-Waldo, G., British Museum, London; Morris, Lady, Boscombe; Pollok, J. C., Bothwell; R. I. and Mrs. Pocock, London; Poulton, Mrs. E. B. and Miss; Radok, F., Upper Norwood; Robertson, Major R. B.,

Chandlers Ford; Rowland-Brown, Miss, Harrow Weald; Schaus, W., London; Sennett, N. S., London; Sharp, Dr. D., Brockenhurst; Shipley, Prof. Dr. A., Cambridge; Sich, A., Chiswick; Swaine, Miss, London; Trechmann, C. O., Hudsworth Tower; Wainwright, C. J., Handsworth; Warburton, C., Cambridge; Watson, J. H., Manchester; Wheeler, Mrs. G., London; Williams, C. B., Merton; Woodland, Dr. W. N. F. London; Walker, Comm. J. J.

Belgium.—Ball, F. J., Brussels; Clavereau, H., Brussels; Kerremans, Mlle., Brussels; Orchymont, A. d', Meenen; Dr. H. and Mme. Schouteden, Brussels; Severin, G., Brussels.

Canada.—Lyman, H. A., Montreal.

Egypt.—Andres, Ad., Cairo.

France.—P. L. and Mme. Boppe, St. Die, Vosges; Oberthür, Mme. C., Rennes; Olivier, Fils, Moulins.

Germany.—Dadd, E. M., Berlin; Horn, Frau W., Berlin; W. and Frau Jung, Berlin; Kolbe, Frau H. J., Berlin; Lehmann, Dr. Th., Heppenheim; Nassauer, Dr. M., Frankfort; Wichgraf, F., Berlin.

Holland.—Hoop, Dr. van der, Rotterdam.

Hungary.—Horvath, Miss, Budapest.

Hawaiian Islands.—Perkins, Mrs. R. C. L., Honolulu.

Spain.—Cabrera, Anatael, Teneriffe; Cabrera, Augustin, Teneriffe; Garcia, y Mercet, R., Madrid.

Sweden.—Tragardh, Prof. Ivar, Stockholm.

Switzerland.—Schulthess, Mrs. A., Zurich.

Turkey.—Graves, P. P., Constantinople; Sureya, Prof. Mehmed, Constantinople.

United States of America.—Calvert, Mrs. P. P., Philadelphia; Comstock, Mrs. J. H., Ithaca; Forbes, Mrs. S. A., Illinois; Jones, Miss Noble; Mrs. H., Miss and Master Skinner, Philadelphia; Rane, F. W., Boston; Wheeler, Mrs. W. M., Harvard.

P. P. C.

AMERICAN ENTOMOLOGICAL SOCIETY.

Meeting of April 25th, 1912. Dr. Philip P. Calvert, President in the chair. Twelve members and one visitor were present.

An invitation was received from the International Congress of Hygiene and Demography, to appoint a delegate to the Congress, and the President was authorized to appoint such.

The President and Recording Secretary were appointed to represent the Society at the Second International Entomological Congress to be held in Oxford in August.

Mr. Laurent exhibited males and females of *Callosamia*

angulifera and *promethea* and also their cocoons and the larva of *promethea*. He said he believed the two were abundantly distinct specifically and that virgin females of either only attract their respective males. He also said that the cocoon of *angulifera* is never suspended.

Mr. Herman Hornig said he had found the cocoons of *angulifera* suspended.

Mr. Rehn made some remarks on the crickets of the group Mogoplisti, referring particularly to the general confusion in the use of certain generic names in the group. Extensive collections made by Mr. Hebard and the speaker had enabled them to go into the relationship of the North American forms more exhaustively than had ever been done before, the results of which show that all of the species from the United States and Lower California belong to genera distinct from the old world generic groups with which most of them were associated at the time of their description.

Mr. H. W. Wenzel exhibited a number of species of the genus *Eleodes* collected by Mr. H. A. Wenzel, dwelling upon the distribution of some of the geographical races. He exhibited the male and female of *E. tenuipes* Casey, described from a unique male collected in Nov., 1890, at El Paso, Texas. Three months later, Dr. Horn described *E. wickhami*, also from a unique male, from Tuscon, Arizona, which Dr. Blaisdell thinks is a race of *E. tenuipes* Casey, this name having priority over Dr. Horn's.

The type is mentioned as being 30 mm. in the male. The male specimen exhibited was collected in the desert about forty or fifty miles south of Alpine, Texas, and measures 38 mm. The female of the species were previously unknown. He also exhibited specimens of *Asida obliterata* Champ. from the same region. A broken specimen of this species in the Horn collection is from Mexico. Among the species and races exhibited were the following: E. *debilis, extricata* forma *cognata,* var. *arizonensis, obsoleta* forma *punctata,* var. *porcata, veterator, quadricollis* var. *anthracina, obscura* var. *dispersa, sponsa hispilabris* unknown form, *tenuipes? Asida obliterata* and *marginata.*

Dr. Calvert exhibited a pair of *Erpetogomphus* from Costa Rica representing a new species, which he proposed to call *E. tristani,* in honor of their collector, Prof. J. F. Tristan. They were of interest, not only because they confirmed the existence of this genus so far south (only one specimen being hitherto known from Costa Rica), but also because of the remarkable modification of the head of the female, probably as an adaptation in mating. The vertex has a deep longitudinal groove into which the inferior appendage of the male can fit, as must be the case if the male holds the female in copulation as do other Gomphinae. The presence of this groove alters the position of the median ocellus of the female in a way unlike that of any other Odonate known to the speaker.

HENRY SKINNER, *Recording Secretary.*

ENTOMOLOGICAL SECTION, ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

Meeting of March 28th, 1912, Mr. Philip Laurent, Director, presiding. Twelve persons were present.

Mr. Rehn said the collection of Orthoptera had been increased during the last month by over five hundred specimens, from various sources.

Dr. Skinner said a large number of specimens of *Trogoderma sternale* Jayne, had been collected from the mounted mammal heads in the hall of the Academy, and he exhibited both sexes.

Dr. Calvert commented on the editorial in the March ENTOMOLOGICAL NEWS, on the subject of priority in nomenclature and read letters relating to the same question, and gave the text of an editorial for the April NEWS in relation to the discussion.

Mr. Rehn said he was in favor of priority in nomenclature. He spoke of his work on the Catalogue of North American Mammals, wherein the law of priority was upheld. He thought that the practicability of *nomina conservanda* was hopeless and considered that stability would only come from upholding the law of priority.

Dr. Skinner remarked that much depended on the method and the possibility of agreement on a way of carrying out *nomina conservanda.*

Dr. Calvert said that specialists in various groups could send in lists of *nomina conservanda* to be accepted or decided on by some central or authoritative committee.

Mr. E. T. Cresson, Jr., spoke of the changes made in certain families of Diptera in a paper by Meigen.

Mr. Hornig exhibited a scale insect on "Asparagus Fern" and said his plants were all infested with it. He asked about the methods of distribution of the species. Discussed by the members.

Mr. Laurent exhibited a peculiar color form of a female *Callosamia promethea* raised from a cocoon.

HENRY SKINNER, *Recorder.*

Meeting of May 23rd, 1912, Mr. Laurent, Director, presiding. Six persons were present.

Dr. Calvert spoke in relation to his work on the Odonata and the results attained by Dr. Walker in his lately published monograph of the North American dragonflies of the genus *Aeshna.* Dr. Walker had found that it required about three years for the larvae of this genus to become full grown, and that this growth was accomplished in about twelve moults. He further complimented Dr. Walker on his work and mentioned its general scope and thoroughness in biological detail. Discussed by the members.

Mr. E. T. Cresson, Jr., made some remarks on damage done to a floor of hard wood by *Lyctus striatus* (Coleop.)

Mr. Laurent exhibited a specimen of *Cicindela modesta* taken at Iona, New Jersey, May 17th, and remarked upon its abnormal marking.

Mr. Liebeck said he had received from E. E. Calder specimens of the green and brown forms of *Cicindela rugifrons* and *modesta,* which were said to have been caught in copulation.

It was announced that Mr. C. T. Greene, an Associate of

the Section, had accepted a position in the "Forest Insect Investigation" Division of the United States Department of Agriculture at Washington, D. C.

E. T. CRESSON, JR., *Recorder pro tem.*

FELDMAN COLLECTING SOCIAL.

The social was invited by Mr. Haimbach to 150 Sumac Street, Wissahickon, Philadelphia, on February 21st, 1912, but owing to the inclemency of the weather only Messrs. Huntington, C. T. and George M. Greene put in an appearance, so no meeting was held.

Meeting of March 20th, 1912, at 1523 South Thirteenth Street, Philadelphia. Eleven members were present. Vice-President Wenzel in the chair.

The death of our honorary member, Prof. John B. Smith, was announced. The Secretary stated that the social was represented at the funeral by five members.

Mr. Daecke said he had had, in the past, much trouble cleaning greasy insects. He stated that it was comparatively easy to clean Coleoptera but in Diptera it was very difficult, as the wings would not stay in position after being wetted but would always collapse. Dipping in gasoline was unsatisfactory, and he finally devised the following method: Made a setting block of plaster of paris to which the fly is fastened, the wings being held in position by strips of white blotting paper. Then ammonia water was dropped on the specimen from a tumbler, a drop at a time, and finally when the insect was allowed to dry it was perfectly clean and the grease had been absorbed by the block, which could be easily seen on the one exhibited. Same speaker said he had dug larvae at Manumuskin, N. J., May 21, and when bred they proved to be *Rhyacionia* (*Evetria*) *rigidana* Fern. (Lep.), which is not in the New Jersey list. Exhibited a specimen of an Empid, *Blepharoprocta binummus* Loew (Dipt.) from Inglenook, Pa., May 28, 1911, which he said had been very puzzling at first to identify. When viewed under the microscope it appears as if holding two coins in its "hand," hence its name.

Mr. Laurent exhibited *Cicindela sexguttata* Fabr. with one, two, four, five, six and eight spots; said if great series were taken it would be found without spots. Mr. Wenzel, Sr., read extracts from Leng's monograph to show that the immaculate form of this species is not var. *violacea* Fabr.

Mr. C. T. Greene reported the capture of a rather rare Dipteron: *Rhyphus alternatus* Say, of which several specimens were taken on windows in the city by George M. Greene, March 18th.

Mr. Wenzel, Sr., exhibited several boxes of Coleoptera comprising his collection of Hispinids of over a thousand specimens all cleaned and remounted.

Mr. George M. Greene exhibited two pairs of *Plectrodera scalator* Fabr. (Col.) from Sedgwick County, Kan., July 3, 1911, collected by J. C. Warren, and also a tick found on the under side of a beetle *Tinotus carolinus* Linn, collected by A. Schmidt, Frankford, Pa., August 15.

Adjourned to the annex.

Meeting of April 17th, 1912, at 1523 South Thirteenth Street, Philadelphia. Twelve members were present; President Haimbach in the chair.

Prof. Calvert exhibited a pair (male and homoeochromatic female) of *Erythrodiplax berenice berenice* Drury (Odon.) from Fernandina, Fla., September 11, 1909, by Prof. J. Chester Bradley. They formed part of a collection of eleven specimens of this species from this locality, Apalachicola, Fla., and St. Simon's Islands, Ga., all by Dr. Bradley, which the speaker had recently examined, thanks to Prof. Needham. The venational features of all eleven had been tabulated and the resulting numbers of cells are intermediate between the more densely veined *berenice berenice* of the more northern States and the *berenice naeva* of southern Florida, the West Indies and Central America, as given in Biologia Centrali-Americana, Neuroptera, p. 268. No examples from northern Florida or southern Georgia had been recorded or tabulated previously.

He also exhibited a male each of *Enallagma durum* Hagen and of *E. aspersum* Hagen (Odon.) from a brickyard pond

near Holmes, Delaware County, Pa., August 29, 1911, taken by himself; very few records of these species from this neighborhood exist. A male of *E. civile* Hagen from the same pond and date is of interest because of its additional black asymmetrical spots on abdominal segments 3 and 4.

This led to a general discussion on the different forms from warm and cold climates and Mr. Wenzel, Sr., exhibited his collection of Cicindelas—*dorsalis* group to bear out his statements.

Dr. Skinner said they have had considerable trouble at the Academy, caused by Dermestids infesting the mounted heads hanging about the museum. He found upon examination that they were a Californian and New Mexican species. *Trogoderma sternale* Jayne. Mr. McCadden claims they do not injure the hair but feed on the cartilage left on the bones and at the base of the horns.

Mr. Daecke said someone at Harrisburg had complained to him of numerous mosquitoes breeding in a certain place. He had gone to this water hole and spread three gallons of oil on the surface and immediately the water beetles came up for air and were easily captured with a net—many specimens were taken. Dr. Skinner said it might be possible to obtain the same result with fish poison as used by the Indians in New Guinea.

Mr. C. T. Greene exhibited the *Rhyphus alternatus* Say (Dip.) reported at the last meeting.

Mr. Geo. M. Greene exhibited *Metathorasa monetifera* Gn. (Lep.) collected by C. T. Greene, Lehigh Gap, Pa., vii-7-07.

Mr. Haimbach recorded a pair of *Packardia albipuncta* Pack. (Lep.) collected by C. T. Greene, Roxboro, Pa., and *Alcathoe caudatum* Harr. collected by Mr. Harbeck, Pocono Lake, Pa., July 13. Adjourned to the annex.

GEO. M. GREENE, *Secretary.*

OBITUARY.

ROBERT W. C. SHELFORD.—It is with deep regret that we learn of the death on June 22, 1912, in his 39th year, of this well-known British Orthopterist.

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